



Distribution and Ecological Groups of Mollusks in Streams Flowing from Springs and Springs in the Regions of the Zarafshan Mountain Range

1. **Boymurodov Khusniddin Toshboltaevich**

2. **Djalilov Farrukh Sobirovich**

Received 2nd Oct 2023,
Accepted 19th Oct 2023,
Online 23rd Nov 2023

¹ Doctor of Biological Sciences, Professor.
Samarkand State University of Veterinary
Medicine, Animal Husbandry and
Biotechnology

² Uzbek-Finnish pedagogical institute

Abstract: We determined the distribution of 6 types of mollusks in the Daraytutsoy streams in the desert region of the Zarafshan Mountains, 9 in the Yettiuyli soy streams in the hilly region, and 7 in the Omonkutonsoy streams in the mountain region. The streams of the desert and mountain regions differ in the number of species compared to the streams of the hilly region. The reason for this may be that different factors in the water had an effect on the distribution of species. If the water temperature of the streams receiving water from springs and springs in the mountain region is relatively low and the flow speed is high, the water of the desert region is distinguished by the high influence of aneropogenic factors. Optimum temperature in the waters of the flat land region has a maximum effect on the number and density of species, up to 9 species are distributed in this region. It was found that 1 species is distributed in rocky biotopes of streams, 8 species are distributed in sandy biotopes, and 7 species are found in muddy biotopes.

Key words: Pisidiidae, Kuiperipisidium terekense, Euglesa hissarica, Bucharamnicola bucharica, Lymnaea stagnalis, phytoreophilic, phytophilic.

Relevance of the topic. Globally, preservation of biodiversity in the area of mountain ranges, ensuring ecosystem stability is considered one of the urgent problems. Especially in mountainous areas, the strong exploitation of natural ecosystems under the influence of anthropogenic factors leads to environmental changes and loss of biological diversity, as well as to a decrease in the diversity of hydrobiont fauna distributed in streams and springs. In our republic, special attention is paid to the preservation of the biodiversity of the animal world, the protection of the bioresources of water bodies and ensuring their sustainable use, and the development of measures to protect rare and endangered species of animals. Currently, the study of the distribution and ecological groups of molluscs in streams flowing from streams and springs in the Zarafshan mountain range is considered one of the urgent problems.

The degree of study of the problem. Taxonomic composition of mollusks, density. research on populations, biology, ecology were studied by leading foreign scientists J.H. Thorp., I.A. Covich (1991), D.C. Aldridge (1999), N.M. Haws (2002), M.M. Horsak (2008), N.F. Mamangkey (2009), K. Szybiak (2009) H.J. Markus (2010), A.F. Bogan (2010), E. Kuznik-Kowalska (2011). The study on the importance and variability of mollusks in determining the level of water pollution were conducted by from the scientists of near foreign countries M.O. Son (2012), L.N. Yanovich (2013), V.V. Bogatov (2014), D.V. Kuzmenkin (2015), N.V. Gural-Sverlova, R.I. Gural (2010, 2016) [2,1,4,5]. The research to study the malakafauna of Uzbekistan on the taxonomic and zoogeographic structure, biology, ecological characteristics, and economic importance of mollusks conducted by Z.I. Izzatullaev (1992, 2018, 2022), A. Pazilov (2018, 2021, 2022) Kh.T. Boymurodov (2019, 2022), J. Kudratov (2016, 2023) B. Otakulov (2020,2021), A. Egamkulov (2021, 2022), Z. Bobomurodov (2022) [3,6,7,8,9, 10].

Materials and learning styles. The study of mollusks and the collection of materials from streams flowing from springs and streams in the Zarafshan mountain range began in 2018. Materials for research in 2018-2023 were collected from ditches and streams flowing from springs in the Zarafshan mountain range. A total of 341 samples were studied, including 458 mollusks. These mollusk samples are large systematic works was studied, in the identifiers by Rijnashvili, 2005; Starobogatov, Izzatullaev, 1984, Izzatullaev, Boymurodov, 2010, Izzatullaev 2019, with the methods cited.

Research results. In addition to springs and springs, water ecosystems and mollusk fauna in the territory of the Zarafshan mountain range have not been fully studied until now. Stream water with its physical and chemical properties affects the distribution and ecological groups of hydrobionts. We studied the distribution, density, and ecological groups of mollusk fauna in springs and streams flowing from springs in the desert region of the Zarafshan Mountains, Daraytutsoy, Ettiuyli soy in the hill region, and Omonkuton soy in the mountain region. Species of Pisidiidae, Euglesidae, Belgrandiellidae, *Lymnaeidae* and *Planorbidae* families were found in streams flowing from springs and springs in the Zarafshon mountain range.

Streams flowing from Daraytutsoy springs and springs. This stream is located in the desert region, and the total length of streams flowing from springs and springs is more than 2-2.5 km. 6 species of mollusks belonging to 3 families are distributed in streams (Table 1). *Kuiperipisidium terekense* from Pisidiidae family 0.8 per 1 m², *Kuiperipisidium polutitimeticum* 0.5 *Kuiperipisidium issykkulense*, *Kuiperipisidium sogdianum*, *Euglesa hissarica*, *Euglesa turkestanica*, *Euglesa obliquata* species from Euglesidae family were not found in Daraytutsoy ditches. In the initial parts of the ditches that receive water from the springs, the density of species is high, and as the water level changes, it is observed that the number and density of species decrease sharply. *Lymnaea stagnalis* 0.4 and *Lymnaea auricularia* from the family Lymnaeidae on average in rocky places in ditches. 0.6, *Planorbis planorbis* 0.8 and *Anisus ladacensis* 0.6 from the family Planorbidae were studied. We found that the species *Planorbis tangitarensis*, *Lymnaea truncatula*, *Lymnaea thiessea*, *Lymnaea oblonga*, *Lymnaea subangulata*, *Lymnaea bactriana* are not distributed in the stream ditches. It was found that 37.5% of the total species distributed in the streams were found in the streams flowing from the springs and springs of Daraytutsoy.

Streams flowing from Yettiuyli soy springs and springs. The stream is located in the hill region, 9 species of mollusks are distributed in the stream. From the Pisidiidae family, *Kuiperipisidium issykkulense* 1.0, *Kuiperipisidium sogdianum* 0.9, *Kuiperipisidium polutitimeticum* 1.0 are distributed in sandy and muddy biotopes. From the Euglesidae family, we found that *Euglesa turkestanica* 0.5, *Euglesa*

Table 1. Molluscs in ditches and springs distribution and ecological groups (n= 10, m²/piece)

№	Types	Regions			Biotores			Ecological groups
		desert	Flat land	mountain	Rocky terrain	Sandy lands	In clay	Yetiuylysoy ditches
		Daraytutsoy ditches	Yetiuylysoy ditches	Omonkutonsoy ditches				
	Pisididae family							
1	<i>Kuiperipisidium terekense</i>	0,8±0,1	-	0,6±0,1	-	+	-	Cryophilic
2	<i>Kuiperipisidium issykkulense</i>	-	1,0±0,1	-	-	-	+	Cryophilic
3	<i>Kuiperipisidium sogdianum</i>	-	0,9±0,2	0,6±0,1	-	+	-	Cryophilic
4	<i>Kuiperipisidium polytmeticum</i>	0,5±0,1	1,0±0,1	-	-	-	+	Cryophilic
	Euglesidae family							
5	<i>Euglesa hissarica</i>	-	-	0,5±0,1	-	-	+	Pelolimnophil
6	<i>Euglesa turkestanica</i>	-	0,5±0,1	-	-	-	+	Pelolimnophil
7	<i>Euglesa obliquata</i>	-	0,9±0,1	-	-	+	-	Pelolimnophil
	Belgrandiellidae family							
8	<i>Martensamnicola brevicula</i>	-	-	0,4±0,1	-	+	-	Cryophilic
9	<i>Martensamnicola hissarica</i>	-	-	-	-	+	-	Cryophilic
10	<i>Bucharamnicola bucharica</i>	-	1,3±0,1	0,3±0,1	+	-	-	Peloreophilic
	Lymnaeidae family							
11	<i>Lymnaea stagnalis</i>	0,4±0,1	-	0,7±0,1	-	+	-	Peloreophilic
12	<i>Lymnaea oblonga</i>	-	1,2±0,2	-	-	-	+	Phytophilic
13	<i>Lymnaea auricularia</i>	0,6±0,1	1,0±0,1	0,4±0,1	-	+	-	Phytoreophilic
	Planorbidae family							
14	<i>Planorbis planorbis</i>	0,8±0,1	-	-	-	-	+	Phytophilic
15	<i>Planorbis tangitarenensis</i>	-	0,9±0,1	0,7±0,1	-	+	-	Phytophilic
16	<i>Anisus ladacensis</i>	0,6±0,1	-	-	-	-	+	Phytophilic
	Number of total types::	6	9	7	1	8	7	

obliquata 0.9. *Bucharamnicola bucharica* from Belgrandiellidae family 1.3, *Lymnaea oblonga* from Lymnaeidae family 1.2, *Lymnaea auricularia* 1.0, *Planorbis tangitarenensis* from Planorbidae family 0.9. It was observed that the canchological characteristics of the shells of the species changed under the influence of the factors of the water environment. In this stream, 56.2% of the species distributed in streams were found, they belong to crenophilic, pelolimnophilic, peloreophilic, phytophilic and phytophilic ecological groups.

Streams flowing from Omonkutonsoy springs and springs. The stream is located in the mountain region, its water temperature is 6-160 C, its water clarity is 9-15 cm. water flow rate is 1.8-3.4 m/sec. It was found that a total of 7 species are distributed in the ditches of Omonkutonsoy. We studied the distribution of species in 4 streams in this stream. In the initial and middle parts of the stream, *Kuiperipisidium terekense* and *Kuiperipisidium sogdianum* from the family Pisididae 0.6, *Euglesa hissarica* 0.5, *Martensamnicola brevicula* 0.4, *Bucharamnicola bucharica* 0.3, *Lymnaea stagnalis* 0.7, *Lymnaea auricularia* 0.4, *Planorbis tangitarenensis* 0.7 were analyzed. It was studied whether the species distributed in the stream ditches belong to crenophilic, pelolimnophilic, peloreophilic, phytophilic and phytophilic ecological groups.

We determined the distribution of 6 types of mollusks in the Daraytutsoy streams in the desert region of the Zarafshan Mountains, 9 in the Yettiuylisoy streams in the hilly region, and 7 in the Omonkutonsoy streams in the mountain region. There are 1 species in rocky biotopes of ditches, 8 species in sandy biotopes, and 7 species in muddy biotopes. The streams of the desert and mountain regions differ in the number of species compared to the streams of the hilly region. The reason for this may be that different factors in the water had an effect on the distribution of species. If the water temperature of the streams receiving water from springs and springs in the mountain region is relatively low and the flow speed is high, the water of the desert region is distinguished by the high influence of aneropogenic factors. Optimum temperature in the waters of the Adir region has a maximum effect on the number and density of species, up to 9 species are distributed in this region.

Distribution and ecological groups of mollusks in streams flowing from springs and springs in the regions of the Zarafshan mountain range

Abstract. We determined the distribution of 6 types of mollusks in the Daraytutsoy streams in the desert region of the Zarafshan Mountains, 9 in the Yettiuylisoy streams in the hilly region, and 7 in the Omonkutonsoy streams in the mountain region. The streams of the desert and mountain regions differ in the number of species compared to the streams of the hilly region. The reason for this may be that different factors in the water had an effect on the distribution of species. If the water temperature of the streams receiving water from springs and springs in the mountain region is relatively low and the flow speed is high, the water of the desert region is distinguished by the high influence of aneropogenic factors. Optimum temperature in the waters of the flat land region has a maximum effect on the number and density of species, up to 9 species are distributed in this region. It was found that 1 species is distributed in rocky biotopes of streams, 8 species are distributed in sandy biotopes, and 7 species are found in muddy biotopes.

List of used literature

1. Алимов А.Ф. 1965. Фильтрационная способность рода *Sphaerium* (Scopoli)// Доклады АН СССР. Т. 164, №1-3. С.185-197.
2. Алимов А.Ф. 1981. Функциональная экология пресноводных двустворчатых моллюсков. Л.: Наука. 343 с.
3. Иззатуллаев З.И. 1992. Водные моллюски Средней Азии – индикаторы загрязнения водоёмов и водотоков // Гидробиол. журн., Т. 28, №1. С.85-90.
4. Иззатуллаев З.И. 2019. Фауна моллюсков водных экосистем Средней Азии и сопредельных территорий. Ташкент: LESSON PRESS. 328 с.
5. Иззатуллаев З.И., Боймуродов Х.Т. 2009.Зарафшон дарёси икки паллали моллюскалари. // Самарканд: СамДУ. 95 б.
6. Боймуродов Х. Т. Распространение двустворчатых моллюсков в водоемах, созданных человеком, и их биологическая разновидность // Узбекский биологический журнал. 2010. №6. С. 41-44.
7. Boymurodov Kh. T. The degree of content of natural radionuclides in mollusks // Узбекский биологический журнал. 2011. №5. Р. 41-42.
8. Izzatullaev Z.I., Boymurodov X.T. Results of the development of two-limbed preservative mollusks (*Bivalvia*: *Unionidae*, *Anadontinae*) in Uzbekistan // Journal of the Moscow Society of Experimental Nature. –Moscow,2016.t.121.Pub 5p.16-19.

9. Boymurodov Kh.T., Khasanov N. Influence of abiotic factors on biodiversity of the populations of bivalve molluscs of the Lower Zarafshan reservoirs. E3S Web of Conferences 265, 01012 (2021) APEEM 2021 <https://doi.org/10.1051/e3sconf/202126501012> РУДН
10. Baymurodov Kh. T. Advanced studies in science: theory and practice, The Collection of Scholarly Papers Materials of the International Scientific Conference, 239-242 (2016)

